

Lesson 1: Observation, inference, and discovery

Begin lesson

Card 1 of 12

Begin lesson

Teaching notes

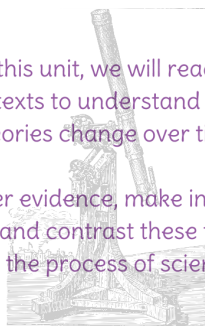
Click the "Begin lesson" button to view this lesson.
Teaching notes for each slide will appear in this box.

Let's Review!

Card 2 of 12

By the end of this unit, we will read informational and literary texts to understand how scientific theories change over time.

We will gather evidence, make inferences, and compare and contrast these theories to understand the process of scientific inquiry.



Teaching notes

Suggested Pacing: ~1 minute

Directions:

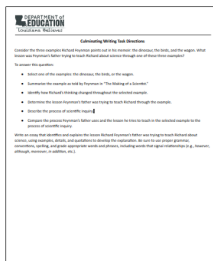
- Read the slide to briefly review what students will learn over the course of this unit.

Student Look-Fors:

- The following is from the unit overview for this unit:
Students read informational and literary texts to understand how different scientific theories have changed over time. They express their understanding about these theories and the steps of scientific investigation by gathering evidence and comparing and contrasting different theories.

Let's Review!

Card 3 of 12



You will show you have met the unit goals and understand complex texts by:

- writing two explanatory essays
- engaging in a formal discussion
- reading, discussing, and writing about texts

Teaching notes

Suggested Pacing: ~2 minutes

Directions:

- Say, "The main text we will read in this unit is 'The Making of a Scientist' by Richard Feynman. In the text, he talks about the lessons his father taught him about how to look at the world like a scientist. At the end of the unit, you will write an explanatory

essay about a lesson Feynman's father teaches him. You will also read a narrative text called The Templeton Twins Have an Idea in book clubs. At the end of the unit, you will have a formal discussion and write an explanatory essay about a theme of this text. You will also read some other texts to help us think about how scientific theories change over time, and how these changes reflect the process of scientific inquiry."

Let's Prepare!

Card 4 of 12



Today we will:

- Engage in an observation activity
- Set up structures for independent reading, and begin reading *The Templeton Twins Have an Idea*

Teaching notes

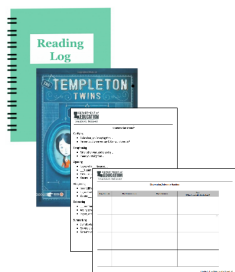
Suggested Pacing: ~1 minute

Directions:

- Read the slide.

Let's Prepare!

Card 5 of 12



You will need:

- The conversation stems handout
- *The Templeton Twins Have an Idea* by Ellis Weiner
- Your reading log
- The observation/inference graphic organizer

Teaching notes

Suggested Pacing: ~1 minute

Directions:

- Locate directions under the Additional Materials tab for accessing *The Templeton Twins Have an Idea*.
- Access a blank observation/inference graphic organizer and conversation stems handout under the Additional Materials tab.

- Distribute the observation/inference graphic organizer and conversation stems handout using an established classroom routine.
- Wait to distribute *The Templeton Twins Have an Idea* until later in the lesson.

Let's Practice!

Card 6 of 12



- An **inference** is an educated guess.
- Use your senses to guess what is in the Mystery Bag!
 - Record your observations about the contents of the bag
 - Make an inference about what's in the bag

Teaching notes

Suggested Pacing: ~10 minutes

Directions:

- Divide students into book club groups using an established classroom routine
- Review the meaning of "inference:" the process of drawing a conclusion based on reasons and evidence.

- Model the procedure for this activity, using a model bag (suggestion: fill this bag with a cup of popped popcorn). Shake the bag and ask students to describe what they hear. Allow a student to touch the contents and describe how it feels. Allow a student to smell the bag and describe the scent. Model jotting notes about these observations (or have a student recorder). Allow a student to make an inference about what's in the bag, and record the inference. Finally, let the students see what's in the bag
- Distribute the remaining bags, one to each group, and have students repeat this process in their book club groups
- Ask students to record their inferences in their reading logs

Guiding Questions and Prompts:

- Remind students to use their senses and record their observations first, then their inferences. No peeking!
- Prompt students to use the conversation stems as they are discussing. As needed during the discussion, model how to use the stems. The goal is to get students to use these prompts as statements when they discuss with their peers
 - "So you're saying/asking/seeking clarification on [restatement of the student's comment/question]. Do I have that right?"
 - "Y, restate or rephrase what X said."
 - "How do you know? What evidence from the text supports your thinking?"
 - "Who agrees/disagrees with X? Why?"
 - "Can someone add to what X said?"
 - "Take your time. We'll wait."
 - "Who wants to change their thinking after listening to X's explanation/comment/question? How did it change your thinking?"

Student Look-Fors:

- Students should use all their senses to record observations about the contents of the mystery bag
- Students should work cooperatively, sharing the bags with their group members, and discussing

their observations and inferences using appropriate speaking and listening skills

Additional Notes:

- This activity is designed to spark students' interest in unit themes. It is meant to be a quick motivating "hook," NOT a full class period activity. Each group will only have time to examine two, maybe three, bags.

Let's Discuss!

Card 7 of 12

How did your observations help you figure out what was in the mystery bags?

Teaching notes

Suggested Pacing: ~5 minutes

Directions:

- Allow a few students to share how specific observations helped them infer what was in the bag.
- Tell students that the themes of this unit are the importance of observation and investigation to verify understanding, which is just what they

practiced using the mystery bags. Tell students that throughout the unit, they will be reading texts which reflect these themes.

Guiding Questions and Prompts:

- Which of your senses did you use to observe?
- When were you ready to make an inference about what was in that bag?
- Prompt students to use the conversation stems as they are discussing. As needed during the discussion, model how to use the stems. The goal is to get students to use these prompts as statements when they discuss with their peers.
 - "So you're saying/asking/seeking clarification on [restatement of the student's comment/question]. Do I have that right?"
 - "Y, restate or rephrase what X said."
 - "How do you know? What evidence from the text supports your thinking?"
 - "Who agrees/disagrees with X? Why?"
 - "Can someone add to what X said?"
 - "Take your time. We'll wait."
 - "Who wants to change their thinking after listening to X's explanation/comment/question? How did it change your thinking?"

Student Look-Fors:

- Students should give specific examples of observations that helped them infer what was in the bag (e.g., "I knew it was popcorn when I smelled it," "I knew it was coins when I shook the bag and heard them jingle.")
- Students should listen while peers are speaking and respond to peer comments appropriately.

Let's Read!

Card 8 of 12



- Listen while I read aloud the prologues to *The Templeton Twins Have an Idea*.

Teaching notes

Suggested Pacing: ~5 minutes

Directions:

- Distribute copies of *The Templeton Twins Have an Idea* using an established classroom routine.
- Read the slide.
- Read aloud "Prologue: The Beginning" and "Actual Prologue: Trying to Get Started."

Student Look-Fors:

- Students should listen and follow along in the text.

Let's Discuss!

Card 9 of 12

Based on these prologues, what kind of person do you think the narrator is?

Based on these prologues, what kind of story do you think this will be?

Teaching notes

Suggested Pacing: ~5 minutes

Directions:

- Ask the questions on the slide.

Guiding Questions and Prompts:

- How are these prologues different from prologues you have read in other texts?

- What is a narrator? What type of points of view do narrators typically take in fiction (e.g., first person, second person, or third person)?
- What effect do these prologues have on the reader?
- Why might the author have chosen to begin his book this way?
- Prompt students to use the conversation stems as they are discussing. As needed during the discussion, model how to use the stems. The goal is to get students to use these prompts as statements when they discuss with their peers.
 - "So you're saying/asking/seeking clarification on [restatement of the student's comment/question]. Do I have that right?"
 - "Y, restate or rephrase what X said."
 - "How do you know? What evidence from the text supports your thinking?"
 - "Who agrees/disagrees with X? Why?"
 - "Can someone add to what X said?"
 - "Take your time. We'll wait."
 - "Who wants to change their thinking after listening to X's explanation/comment/question? How did it change your thinking?"

Student Look-Fors:

- Students should understand that the structure and the narrative point of view are unusual compared to typical fictional texts. Typically, the narrator doesn't directly interact with the reader in the way that this narrator does. Typically, a book doesn't begin by saying "The End"!
- Students should recognize that the narrator is arrogant and somewhat rude.
- Students should recognize that the author is writing this way to be funny.
- Students should predict that the rest of the story will be written in a funny way, with unusual structure and narrative point of view.

Let's Practice!

Card 10 of 12

Character: Narrator	
Observation	Inference
I cannot help but ask myself, <i>Do I want the Reader to like me? Do I care?</i> I think we can all agree that I don't care. (prologue)	

Teaching notes

Suggested Pacing: ~7 minutes**Directions:**

- Explain to students that in this unit, they will read like scientists, observing and investigating to make inferences and confirm them. Direct students to set up a character chart section in their reading logs. As they read the text, they will create a chart for each

character where they record observations from the text, and make inferences about character traits.

- After they have set up the chart and copied the quote from the prologue of the text, direct students to write down an inference about the narrator's character based on this observation. Allow 2-3 students to quickly share their inferences.
- Remind students to leave plenty of space to add to the chart as they continue reading!

Guiding Questions and Prompts:

- What kind of person would make a comment like this?
- Prompt students to use the conversation stems as they are discussing. As needed during the discussion, model how to use the stems. The goal is to get students to use these prompts as statements when they discuss with their peers.
 - "So you're saying/asking/seeking clarification on [restatement of the student's comment/question]. Do I have that right?"
 - "Y, restate or rephrase what X said."
 - "How do you know? What evidence from the text supports your thinking?"
 - "Who agrees/disagrees with X? Why?"
 - "Can someone add to what X said?"
 - "Take your time. We'll wait."
 - "Who wants to change their thinking after listening to X's explanation/comment/question? How did it change your thinking?"

Student Look-Fors:

- Students should complete this graphic organizer into their notebooks.
- Students should fill in the box with words or phrases that describe the narrator (e.g., arrogant, rude, funny).

Let's Express Our Understanding!

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Write a response to these questions in your reading log.

- How do the skills of observation and inference help scientists make discoveries?
- How do the skills of observation and inference help readers make discoveries?

Teaching notes

Suggested Pacing: ~5 minutes

Directions:

- Read the directions on the slide.

Guiding Questions and Prompts:

- How did observation and inference help you in the mystery bags activity?

- How did observation and inference help you think about character traits of the narrator?

Student Look-Fors:

- Sample student response: The skills of observation and inference help scientists make discoveries because by using all their senses to observe things, they can figure out new information that they didn't know before. For example, when I observed the mystery bag shaking it and listening to the sound it made, and by smelling it, I figured out that it was popcorn. The skills of observation and inference also help readers make discoveries because readers have to pay close attention to details in books in order to figure things out. For example, I noticed that the narrator said he doesn't care if the reader likes him, and that made me think that he is rude.

Let's Close!

Card 12 of 12

In this lesson, you learned about the importance of observation and investigation to verify understanding.

You also made inferences to describe the narrator of a text.

Teaching notes

Suggested Pacing: ~1 minute

Directions:

- Read this slide.

Lesson 1: Observation, inference, and discovery

About this lesson

Students launch the unit by engaging in an observation and inference activity, beginning to read "*The Templeton Twins*," and setting up structures for successful independent reading. They create an organizer in their reading logs (character chart) that they use to track important information throughout the unit.